



Czech

TÜV SÜD Czech s.r.o  
Kancelář Praha  
Novodvorská 994/138  
142 21 Praha 4  
Česká Republika

# **TÜV SÜD SCoRE**

## Building sustainability assessment

Building:	VTP Roztoky, Přílepská 1920, Roztoky
Building owner:	VTP Roztoky, a.s., Přílepská 1920, Roztoky
Company:	TÜV SÜD Czech s.r.o., Novodvorská 994/138, Praha 4
Registration number:	05.763.226
Team of experts:	Ing. P. Zinburg, Ph.D., Dr. P. Hlavinková, Ing. P. Marek, Ing. S. Hykyšová, Ing. J. Kulhánek MRICS
Release date:	2012-08-01



## Contents:

1.	Introduction .....	3
1.1.	Subject of the assessment.....	3
1.2.	Methodology.....	3
1.3.	Team of experts.....	3
2.	Final Result .....	4
2.1.	Achieved SCoRE .....	4
2.2.	The validity of this assessment .....	6
3.	General information about the building .....	7
4.	Comments on evaluation .....	8
4.1.	Module 1 – Energy .....	8
4.1.1.	M1.01 - Energy performance of the building assessment .....	8
4.1.2.	M1.2 - Opportunities to improve energy performance of building .....	10
4.2.	Module 2 – Water, waste water, waste .....	11
4.2.1.	M2.1 – Use of water .....	11
4.3.	Module 3 – Soil.....	15
4.3.1.	M3.1 - Contamination of soil and old environmental burdens.....	15
4.4.	Module 4 – Building .....	17
4.4.1.	M4.1 – Building technique and building materials .....	17
4.4.2.	M4.2 - Sustainability of construction .....	22
4.4.3.	M4.3 - Noise control .....	23
4.4.4.	M4.4 - Comfort conditions.....	23
4.4.5.	M4.5 - Equipment Functionality .....	23
4.4.6.	M4.6 - Quality of equipment.....	24
4.4.7.	M4.7 - Maintenance costs.....	24
4.4.8.	M4.8 - Opportunities to improve evaluation of module Building:.....	24
4.5.	Module 5 – Location .....	25
4.5.1.	M5.1 - Infrastructure association.....	25
4.5.2.	M5.2 - Infrastructure of work & living.....	26
4.5.3.	M5.3 - Image and state of location and accommodation .....	26
4.5.4.	M5.4 - Criteria specific for property .....	26
4.5.5.	Opportunities to improve evaluation of module Location.....	27
5.	Annex: Checklist - detailed evaluation .....	28

## 1. Introduction

### 1.1. Subject of the assessment

The subject of this assessment is the building VTP Roztoky, Přílepská 1920, 252 63 Roztoky in Czech Republic. The owner of the building is company VTP Roztoky a.s., Přílepská 1920, Roztoky, Czech Republic.

### 1.2. Methodology

This sustainability assessment is elaborated according to standard N-BG09 in the category existing office buildings adapted to local Czech regulation.

### 1.3. Team of experts

Participation of experts is as follows:

Score Sub-group	Expert
Energy	Ing. Pavel Zinburg
Water	Ing. Pavlína Hlavinková
Waste water	
Waste	
Soil / Contamination	
Building design	Ing. Pavel Marek, Ph.D.
Building materials	Ing. Soňa Hykyšová
Separation of waste	Ing. Pavel Marek, Ph.D.
Miscellaneous	
Technical building services	Ing. Pavel Zinburg
Transport infrastructure	Ing. Jan Kulhánek, MRICS
Work / life infrastructure	
Image and condition of location and neighborhood	
Site-specific criteria, outward appearance of building	

Project manager:

Ing. Pavel Zinburg  
 Real Estate Service  
 TÜV SÜD Czech s.r.o.  
 Modřanská 96a  
 147 00 Praha 4  
 Czech Republic  
 phone: +420 244 016 532  
 mobile: +420 725 385 982  
 e-mail: pavel.zinburg@tuv-sud.cz



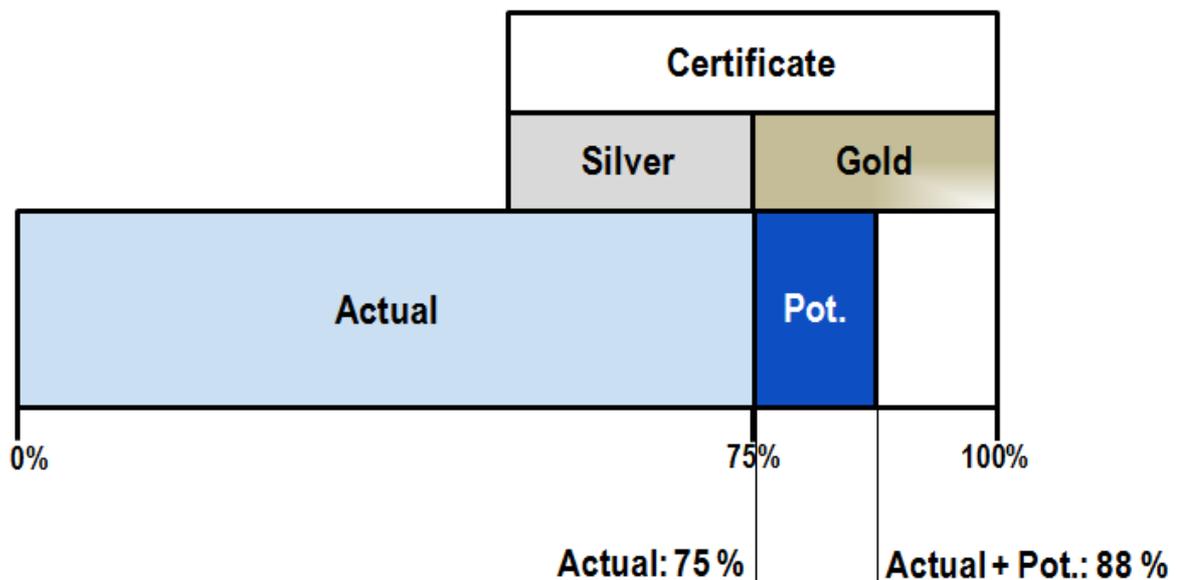
## 2. Final Result

### 2.1. Achieved SCoRE

The building VTP Roztoky, Přílepská 1920, 252 63 Roztoky receives TÜV SÜD certificate with a score in the grade level GOLD.

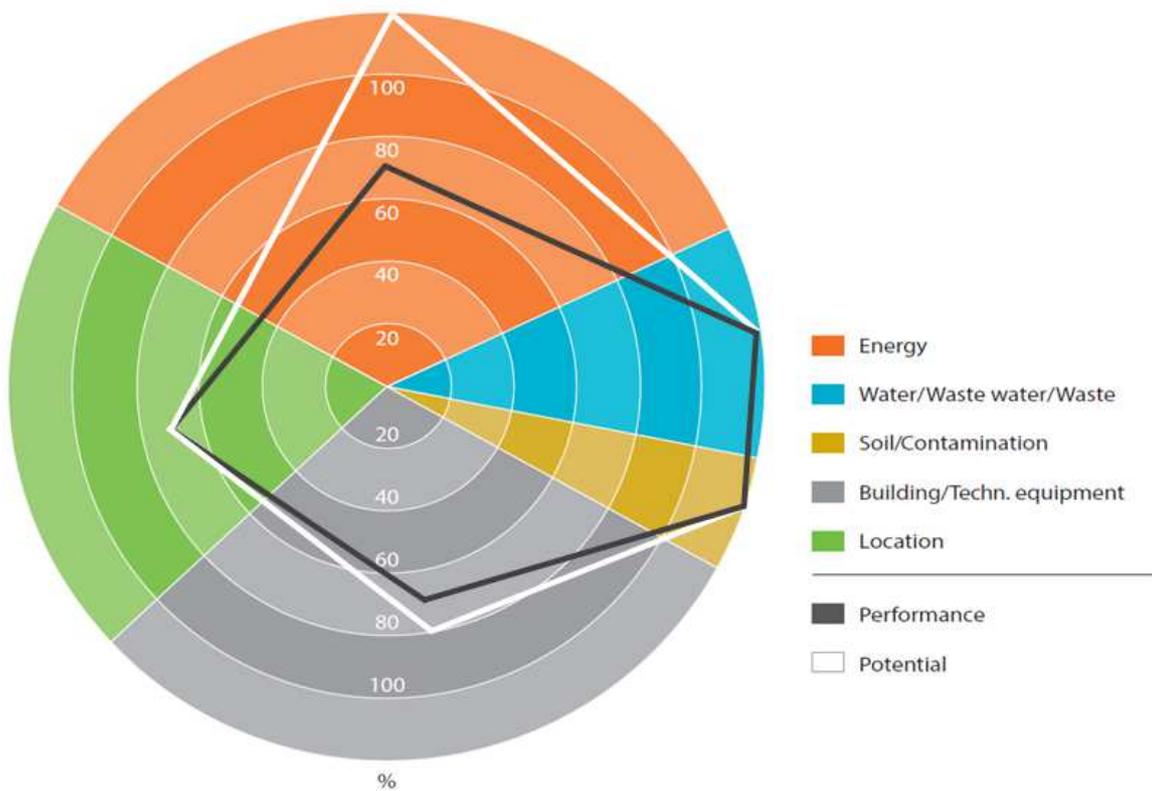


The building VTP Roztoky receives 1 505 points of 2000 possible. With the realization of potential for improvement the building can achieve 1 764 points.



The individual parts of the assessment were evaluated as follows:

No.	Module	Achievable SCoRE	Achieved SCoRE	Possible potential for improvements
1	Energy	700	511	700
2	Water, waste water and waste	200	200	200
3	Soil / Contamination	100	100	100
4	Building	600	414	484
5	Location	400	280	280
<b>Total SCoRE:</b>		<b>2 000</b>	<b>1 505</b>	<b>1 764</b>



Detailed evaluation of respective issues is mentioned in the checklist. More detailed comments, if they were necessary, you can find in the following chapter 3 “Comments on evaluation”.



## **2.2. The validity of this assessment**

This assessment is valid for three years. During this period, the customer must notify TÜV- SÜD every fundamental change that is related to the sustainability of the building. After this period, all points of the assessment has to be verified again and re-certification process must be carried out.

Especially in case of the absolutely new building of VTP Roztoky it is necessary to verify all facts under the real operating conditions. Level of energy consumption was calculated and must be considered only as an expert estimation. For the following period will be necessary to determine the energy consumption by measurement.

### 3. General information about the building

The subject property “VTP Roztoky” is located in Roztoky, which is in the centre of the Czech Republic. It is situated approximately 18 km to the northwest of Prague city centre. It was designed as office building with special spaces for motor testing laboratories.

VTP - Roztoky is multidisciplinary flat roof building of 4 floors aboveground and 1 floor underground. The structure frame is made by monolithic reinforced concrete, however because of chosen combined construction system with external load bearing walls and internal columns, the structure gives the impression of being light. Foundation is made of reinforced concrete slab supported by concrete piles, as the sub grade is relatively inhomogeneous.

The high portion of windows in facade contributes to comfortable feeling of the employees and decrease the need for artificial light. There are office space near to testing laboratory, where heavy combustion engines will be tested. It puts a high demands on acoustic insulation and protection against vibrations. The new unique structure system called “house in house” was designed for elimination of these negative effects, which fully divide the inner space of testing laboratory from outer space.

The structure uses very complicated system of air conditioning and heating, which comprises energy recovery devices and enables to conduct the heat from the facades exposed to the sun into colder area. It also takes advantage of heat pumps.

See also: <http://www.vtp-roztoky.cz>



## 4. Comments on evaluation

### 4.1. Module 1 – Energy

#### 4.1.1. M1.01 - Energy performance of the building assessment

##### Data for assessment

VTP Roztoky is a new building so the measured data concerning the energy consumption are not available. For this reason, the energy performance of the building has been evaluated on the basis of calculations made within Energy performance certification of the building.

Energy performance certificate has been elaborated according to the Czech legislation and standards and issued on the 25. May 2012. Laws and regulations related to Energy performance of building in Czech Republic are as follows:

- Act No. 406/2000 Coll.
- Decree No.148/2007 Coll.
- Standard ČSN EN 15217 (Methods of expressing energy performance and for energy certification of buildings)

##### Energy consumption

Brief review of the calculated annual delivered energy to the building (related to „standardized operation of the building) is as follows:

Heating:	68,325 MWh / 17 kWh/(m <sup>2</sup> ,a)
Cooling:	26,421 MWh / 7 kWh/(m <sup>2</sup> ,a)
Ventilation:	74,903 MWh / 19 kWh/(m <sup>2</sup> ,a)
Hot water:	16,670 MWh / 4 kWh/(m <sup>2</sup> ,a)
Lighting:	121,690 MWh / 31 kWh/(m <sup>2</sup> ,a)

Total delivered energy consumption: 308,009 MWh/a ; 78 kWh/(m<sup>2</sup>,a)

The building is in the middle levels of energy performance according - "B" (only "A", "B" and "C" are acceptable). All energy consumption is covered by electricity.

##### Ratings for SCoRE

To meet requirements of Czech legislation, assessment of energy performance of the building is based on calculation of “delivered energy” to the building. Delivered energy is total amount of all kinds of energy supplied through the border of the building during one year. Delivered energy is not recalculated to primal energy, because primal energy has not been introduced in Czech legislation.

Total amount of delivered energy of the assessed building is then compared with delivered energy required by the reference building. Reference building is a building, which just meets current minimum requirements of the Czech standards. It's delivered energy consumption is given in the decree and is fixed - 124 kWh/(m<sup>2</sup>,a).

Span of acceptable energy consumption is shown at the table below:

Requirements on total energy consumption in Czech Republic  
Act No. 406/2000 Coll. - Energy Management  
Decree No. 148/2007 Coll. - Energy Performance Of Buildings

Kind of building	acceptable kWh/(m <sup>2</sup> .year)			unacceptable kWh/(m <sup>2</sup> .year)			
	A	B	C	D	E	F	G
Family house	less	51 - 97	98 - 142	143 - 191	192 - 240	241 - 286	more
Block of flats	less	43 - 82	83 - 120	121 - 162	163 - 205	206 - 245	more
Hotel and restaurant	less	102 - 200	201 - 294	295 - 389	390 - 488	489 - 590	more
Office building	less	62 - 123	<b>124 - 179</b>	180 - 236	237 - 293	294 - 345	more
Hospital	less	109 - 210	211 - 310	311 - 415	416 - 520	521 - 625	more
Educational facility	less	47 - 89	90 - 130	131 - 174	175 - 220	221 - 265	more
Sport facility	less	53 - 102	103 - 145	146 - 194	195 - 245	246 - 297	more
Business centre	less	67 - 121	122 - 183	184 - 241	242 - 300	301 - 362	more

For this reason, we lay the highest acceptable level of energy consumption right to the 124 kWh/(m<sup>2</sup>,a). Than, the acceptable span of energy consumption for SCoRE is as follows:

124 kWh/(m<sup>2</sup>,a) - 0 points to SCoRE (but still acceptable)

61 kWh/(m<sup>2</sup>,a) - 700 points to SCoRE

Thus building VTP Roztoky achieves 511 points which allows obtaining also gold certificate. If less than 50% of maximum points are achieved, no Gold certificate is possible.

### Strengths and weaknesses of the energy performance of the building

Energy system of the building is sophisticated and complicated so the real consumption of energy in the future will depend very much on the method of the operation during different operating conditions.

The strengths of the energy system of the building are:

- Heat pump using geothermal energy in cooperation with latest system Daikin VRV III
- Intelligent sun blinds
- Advanced HVAC technology using variable speed drives and heat regeneration
- Advanced control system

Weaknesses of the energy system of the building are:

- Only average thermal resistance of the envelope of the building
- Only standard solution of the lighting system
- No photovoltaic solar panels to cover part of it's basic level of energy consumption.

#### 4.1.2. M1.2 - Opportunities to improve energy performance of building

Main opportunities to improve energy performance of buildings are as follows:

a) Improving of the energy performance of the lighting system

Lighting system contributes to the overall energy consumption approximately 40% so it's improving would have strong impact on energy performance of the building and consequently on SCoRE rating. Use of lighting system based on LEDs could reduce energy consumption by 60 MWh /year and annual specific energy consumption by 15 kWh /m<sup>2</sup>. It would bring about 165 points to SCoRE rating.

b) Use of photovoltaic solar panels

There is free space on the roof of the building where approximately 60m<sup>2</sup> of photovoltaic cells could be installed. It would bring about 8 MWh/year of electricity, annual reduction in specific energy consumption by about 2 kWh /m<sup>2</sup> and about 22 points to SCoRE rating.

c) Increase of thermal resistance of the building envelope

Thanks to the high efficient heat source of the building, increase of the thermal resistance of the envelop of the building has only small impact on the total energy performance of the building. It would bring annual reduction in specific energy consumption only about 1 kWh /m<sup>2</sup> and about 11 points to SCoRE rating.

The building VTP-Roztoky could achieve the maximum rating (within the energy use), if lighting based on LEDs and solar power to generate electricity are used.

## **4.2. Module 2 – Water, waste water, waste**

### **4.2.1. M2.1 – Use of water**

This is a newly built up building which meets all relevant requirements of the building resulting from the current CR legislation and applicable technical standards.

The building is connected to a public water and sewer system. The only drinking water connection point is equipped with measuring of water consumption. Valid operating instructions and regulations for all parts of water supply and sewerage system are available.

#### **Legislation related to water management in the Czech Republic are as follows:**

254/2001 Coll. Act of 28 June 2001 on Water and Amendments to Some Acts (The Water Act).

274/2001 Coll. Act of 10 July 2001 on water supply and sewerage systems for public use and amending certain laws (Law on Water and Sewage).

416/2010 Coll. Government Regulation on indicators and values of permissible pollution of waste water and elements of the permits to discharge waste water into groundwater.

#### **Legislation related to waste management in the Czech Republic are as follows:**

185/2001 Coll. Act of 15 May 2001 on waste and amendment of some other acts, in the wording of later regulations

376/2001 Coll. Decree of the Ministry of Environment of the Czech Republic and the Ministry of Health of the Czech Republic of 17 October 2001 on the evaluation of hazardous properties of waste

294/2005 Coll. Decree of the Ministry of Environment of the Czech Republic of 11 July 2005 on the conditions of depositing waste in landfills and its use on the surface of the ground and amendments to Decree No. 383/2001 Coll., on details of waste management

352/2005 Coll. Decree of the Ministry of Environment of the Czech Republic of 5 September 2005 on particulars of handling waste electrical and electronic equipment and on the detailed conditions of financing their handling (Decree on handling waste electrical and electronic equipment)

381/2001 Coll., the Ministry of Environment Decree establishing the Waste Catalogue, List of hazardous waste and waste lists and states for the purposes of export, import and transit of waste and the procedure for granting permission to export, import and transit of waste (Waste Catalogue)

383/2001 Coll. Decree of the Ministry of Environment of the Czech Republic of 17 October 2001 on details of waste management (consolidated version)

#### **Water supply**

Supply of drinking water to the VTP Roztoky is ensured by a newly made water connection point PE 90x8.2, which is connected to the existing water line LT DN 80. This connection is made using meter shaft, which is designed to monitor overall consumption of drinking water throughout the area. Drinking water from the hydrometric shafts is led into the building by water piping 90x8.2 PE, where it is connected to internal water supply system. Water piping f63x5.8 PE for water supply to refilling the fire water reservoir is also connected to this meter shaft.

Water connection and areal distribution of water are made according to TNV 75 5402 "Construction of water pipes."

The lengths of the water supply piping:

Connection	PE 90x8.2	length of 15.40 m
Areal distribution	PE 90x8.2	length of 10.70 m
Topping RN	PE 63x5.8	length of 10.40 m
Total		length of 36.50 m

### Water consumption

Water consumption - the building has not yet been in operation, therefore the calculation of water consumption is based only on VH ML Directive No. 9/73 Coll., which provides an average consumption of water per 1 employee (60 l / per day).

Hot service water preparation is centralized, boiler of a 1000 l is located in the basement, cold drinking water is heated indirectly by heating water. Hot water circulation pipeline is equipped with forced circulation.

### The amount of waste water and pollution

Drainage systems of the VTP Roztoky area are designed as wastewater gravity sewer outlets, connected to the public sewerage system (KT DN 300). The public sewerage system is connected to sewer connection KT DN 200, which is ended by inspection and transfer shaft Š01.

Sewerage system is designed as PP 225/200 SN 10 piping with a minimum slope of 2.0%. Waste water is drained from the building VTP to the sewerage system by two sewerage leads (connections) SP01 and SP02.

Lengths of the sewerage system:

Connection	KT200	length of 12.60 m
Campus site sewage	PP225/200	length of 26.90 m
Total length of sewer S		length of 39.50 m
Manholes (W)	2 pieces	

There is also a canteen serving fast food or hot meals. Drainage of sewage water from the canteen is led into the fat drains, which is connected to the sewerage system pipe conduction through the outside fat trap.

Fat trap is the outdoor version of size NG 7, it serves for capturing the fat from the fat drains in the building. Fat trap is installed in bay for sampling. Dimension of the inlet pipe is DN 150. Sludge volume is 700 l, and 280 l of fat container. This type of fat trap is the outdoor version Kessel G NG 7 Euro according to prEN 1825-1.

System of fuels storage and supply is also essential for smooth operation of laboratories. This system is connected to a separate sewerage, which ends in a sewer shaft. The separate sewer connection leads to sewerage equipped with oil separator. Contaminated drip water pollution is monitored by meter of pumped water. Contamination of wastewater shall not exceed the normal contamination of rainwater from roads. In case of exceeding the limits, waste water won't be pumped into the storm drains, but will be disposed of by a specialized company.

### Storm sewers

Collection of rainwater from the VTP area is provided by a local storm sewers that flow into the public storm sewer. Areal connection to public sewer is done through the oil separator and retention basin with controlled drainage of 10 l/s. Storm drains are made of plastic pipes DN 200

which leads into the main input shaft DN 1000. Main input shaft is located on the corner of Přílepská and Bořivojova street.

In accordance with the requirement of local government was built retention basin for storm water detention, which has to handle the maximum current drain rainwater from the built-up area. The total volume of the retention reservoir is 112.9 cubic meters. Subset of 50 m<sup>3</sup> is used as a fire tank.

Rainwater from the roof of the building is drained into a separate storm sewer equipped with tanks of 10 m<sup>3</sup>. This water will be used for flushing the toilets in the building. Supply water tank is fitted with a safety overflow outlet into the retention tank.

Rainwater from hard surfaces area are collected by proposed street inlets to separate sewer and then drained to the oil separator (AS TOP 50 RCS / EO / PB) with a flow rate of 40 l / s, that is equipped also with coalescence and sorption filter. Subsequently, the rain water is drained into a retention tank and then through the outlet regulator to the existing storm sewer.

### Water utility

There is a separate supply of cold water. For flushing toilets and urinals is used rain water that is accumulated in the tank. Overflow from the tank flows into a retention reservoir for rain water. Rain water utilization system is pressure independent, completely separated from the drinking water system. Commercial water retention basin will also serve for irrigation of the surrounding green areas.

### Waste management

The object of the building VTP Roztoky is not still used. Waste management will be solved individually by the users of the building. However, the assumption of the following wastes can be expected:

**Table: Kind of waste that may arise during the operation**

Catalog number	Name of waste	Category
13 02 08	Other engine, gear and lubricating oils	H
13 05 02	Sludge from oil	H
13 05 03	Interceptor sludge	H
13 05 07	Oily water from oil	H
15 01 01	Paper and cardboard packaging	O
15 01 02	Plastic packaging	O
15 01 03	Wooden packaging	O
15 01 04	Metal packaging	O
15 01 06	Mixed packaging	O
15 01 07	Glass containers	O
15 02 02	Absorbents, filter materials (including oil filters not otherwise specified), wiping cloths and protective clothing contaminated by dangerous substances	H
20 01 01	Paper and paperboard	O
20 01 02	Glass	O
20 01 08	Biodegradable waste from kitchens and canteen	O
20 01 21	Fluorescent and / or other waste containing mercury	H
20 01 25	Edible oil and fat	O

Catalog number	Name of waste	Category
20 01 26	Oil and fat other than those mentioned in 20 01 25	H
20 01 39	Plastics	O
20 02 01	Biodegradable waste	O
20 03 01	Mixed municipal waste	O
20 03 03	The street sweepings	O

All the kinds of waste will be treated in accordance with Act No. 185/2001 Coll. On waste as amended, and related legislation and implementing regulations.

The various types of waste will be sorted and treated according to their properties. All waste will be transferred to the beneficiary for further use or final disposal. Removal and disposal will be ensured by the contracted a specialist company.

Currently, colored containers for glass, paper, plastics and MMW are located just in front of the building.

### **4.3. Module 3 – Soil**

#### **4.3.1. M3.1 - Contamination of soil and old environmental burdens**

Based on a study of historical documents (Chronicle of Roztoky city) was found that the evaluated area was previously used as agricultural land and was not exposed to military attacks or bombardment in the past. These facts were confirmed by engineering-geological and geotechnical site survey. Based on this survey was also disproved the existence of the occurrence of contaminated areas in this locality.

Geological survey in this area took place in 2006. It was conducted by GEO LuCa geotechnical agency, having its registered office in the Masaryk street No. 762 in Roztoky. The results of this survey are presented in the Final Report "Roztoky - scientific and administrative center, engineering geological and geotechnical exploration."

#### **Morphological conditions on the site**

VTP Roztoky area is located near the morphologically distinctive platforms on a gentle slope adjacent to the local road. Land of this area was previously used as farmland.

#### **Geological conditions**

After a geological site, a wider area of interest belongs to the northern part of the Barrandian. Proterozoic is the oldest geological formation that is creating significant border of the Paleozoic rocks.

The bedrock in the wider area of interest is represented mainly of Proterozoic greywacke and greywacke slate, with numerous inserts siltstone and shale arranged in Kralupy - Zbraslav group. The fresh character of these rocks are dark gray rocks, fine to medium grained, massive. Greywacke and greywacke slate are usually fractured medium, thick bedded to tabular separation, however, shale and siltstone are thin to thick platy separation in places densely fractured.

Greywacke is significantly more resistant to erosion and denudation and therefore generate a large rock outcrops in the valleys. By contrast, the gentle slopes along the Vltava valley are Proterozoic greywacke and siltstones often weathered to clayey-sandy soil of bright colors. The thickness of weathering mantle is variable from 2 to more than 5m.

Greywacke and siltstones are often permeated porphyries intrusion and dyke basalts. The veins are irregular and different directions, their frequency can be locally significant, then the thickness of the order of decimeter to meter.

In the wider surrounding of the evaluated area, based on archival core holes have been documented mainly weathered shale greywacke and greywacke with varying degrees of fracturing and tectonic disturbance. Position of silty shale and siltstone with varying degrees of fossil weathering manifested tan and white-gray color and a lower strength rocks have been documented locally.

Bedrock rock in the wider area of interest is covered with a layer of fluvial sediments - loamy sands with a variable proportion of gravel at the base, with a variable proportion of coarse clay gravel. They represent relics of the Vltava river terrace levels (age gunzského). Fluvial terrace deposits partially fill surface irregularities in the bedrock, and thus have irregular power.

In the monitored area, the residues sandy terraces are superimposed by eolian-diluvial sediments and eolic, which have the character of loess and loess loam.

### **Hydrogeological conditions**

Proterozoic rocks in the area of interest building up the base Quaternary environments are less permeable to water. Slate greywacke and greywacke are usually considerably fractured, cracks extend quite deep, but usually are closed or sealing. Groundwater circulates in these environments, especially in the weathered surface and loose zones in the form of fissure water with greatly reduced yield, subsidized from the base of terrace deposits. As a whole, Proterozoic rocks are quite poor in groundwater. Given the nature of exploration, drilling works were encountered only rarely of top position of weathered rocks and weathered bedrock.

Well permeable for water environment here are terraced fluvial sediments that are most often represented by loamy to clayey sands, or loamy-sandy and loamy gravels. Generally, there is a continuous aquifer based on the terrace, at the surface less permeable bedrock. Continuous groundwater level was not encountered in completed wells, but the position with a high degree of soil saturation and soft texture indicate long-term soil saturation following positions shallow water infiltration (infiltration or concentrate) the above-lying parts of the terrain.

### **Summary of findings - the distribution of the contaminated area**

The above assessment shows that there is no contaminated sites in the area of VTP, which could affect the quality of bedrock and groundwater. Also in the registry of old environmental burdens of the Czech Republic (see <http://info.sekm.cz/>) is not the territory mentioned. Nearest contaminated sites is about 3 km from the review.

#### **4.4. Module 4 – Building**

##### **4.4.1. M4.1 – Building technique and building materials**

###### **Data for assessment**

VTP Roztoky is a new building which was constructed on “greenfield”. There were used materials and products which are in compliance with Czech requirements on the environmental and health protection in the buildings.

For the assessment of indoor air quality were used project documentation, technical documentation of particular materials, products and appliances. In addition the indoor air quality measurement by accredited laboratory of Health Institute in Ústí nad Labem was performed on 2012-05-01 in one office room and one laboratory.

###### **Legislation related to indoor air pollutants and low-emission building materials in the Czech Republic are as follows:**

- Act of the Czech Republic No. 86/2002 Coll., on air protection and on amendment of some other acts, as amended
- Act of the Czech Republic No. 258/2000 Coll., on public health protection and on amendment of some other acts, as amended
- Decree of the Ministry of the Health of the Czech Republic No. 6/2003 Coll., on hygienic limits of chemical, physical and biological indicators for indoor environment of residential rooms of some buildings, as amended
- Government Regulation No. 361/2007 Coll., determining conditions for occupational health protection, as amended
- Decree of the Ministry of the Regional Development of the Czech Republic No. 499/2006 Coll., on building documentation, as amended
- Decree of the Ministry of Health of the Czech Republic No. 409/2005 Coll., on the hygiene requirements for the products coming into direct contact with water and for water treatment, as amended

###### Asbestos/Artificial mineral fiber (AMF) suspicion

VTP Roztoky is a new building constructed without the demolition or reconstruction of any existed building. For this reason the asbestos survey was not required by building authority. The asbestos fibers and products containing asbestos could not be used. Only new undamaged non-asbestos AMF products were used during the construction (AMF boards manufactured by Knauf Insulation, spol. s r.o., declaration of conformity).

The prohibition of the marketing and use of all asbestos fibers is laid down in Annex XVII to the EU Regulation (EC) 1907/2006 on the registration, evaluation and authorization of chemicals (REACH), which is directly applicable in all EU Member States. The placing on the market and use of asbestos fibers and of products containing these fibers added intentionally was prohibited by Commission Directive 1999/77/EC. In the Czech Republic was this prohibition implemented to national legislation in 2004.

###### PCB suspicion

Only new products were used in the building: no PCB suspicion. The prohibition of the marketing and use of all PCBs is laid down in Annex XVII to the EU Regulation (EC) 1907/2006 on the registration, evaluation and authorization of chemicals (REACH), which is directly applicable in all EU Member States.



### HCH/PCP suspicion

The use of pentachlorophenol (PCP) was prohibited in the year 2004 by Decree No. 221/2004 Coll., on banning or restricting the use of dangerous chemicals and chemical preparations and or products containing those substances or preparations. At this time the prohibition of the use of this substance is regulated directly by Annex XVII to the EU Regulation (EC) 1907/2006.

VTP Roztoky is a new building, where only new products made from wood were used.

The use of gama-hexachlorecyklohexan (lindan) in agriculture is prohibited from the year 1995 in the Czech Republic.

### PAH suspicion

No asphalt tiles made of road tar and no agglomerated cork insulation under facades and under floors and no black products for parquet floorings were used.

The main source of PAH in VTP Roztoky will be exhaust gases from tested vehicles. But this issue is solved by using of advanced ventilation system.

Concentrations of naphthalene in the interior air of the office room and laboratory were at very low level, below 0,4 µg/m<sup>3</sup> (see the Table 1, 2 and 3).

### Heavy metals suspicion

In VTP Roztoky were used cast iron and plastic (PE) water pipes, valves and fittings supplied by following manufacturers: Pipelife Czech s.r.o., Hawle Armatury s.r.o. and Saint – Gobain PAM. During the assessment was checked declarations of conformity. Used products meet the requirements on the products intended into the direct long time contact with drinking water. Use of lead in piping for drinking water was restricted in the year 2005 by Decree No. 409/2005 Coll.

In the interior were used wall paints (Remal) and pigments without content of lead. The MSDS of paints were checked. In addition the supplier of paints was interviewed by the phone.

VTP Roztoky is a new building - higher content of lead in floor dust (more than 200 mg/kg) is not expected.

### Volatile organic compounds (VOC):

At the beginning the potential sources of VOC were identified: interior paints, chipboards, sealants, adhesives, carpets and floor coverings.

#### Results of the assessment:

Content of VOC in paints (REMAL, manufacturer: Barvy a laky Teluria, spol. s r.o.): 2 g/l is in compliance with limit valued of VOC valid from 2010-01-01 which is 30g/l.

For the epoxy floor covering COMFLOOR manufactured by COMING PLUS a.s. the declaration of conformity, test of chemical resistance and certificate from the National Institute of Public Health were checked. The emission of VOC are negligible.

Used textile (polyamide) carpet tiles Modulys meet the requirements of LEED and BREEAM certification standard.

Used chipboards manufactured by Kronospan CR, spol. s r.o. were tested by Timber Institute in Prague according to EN 717-2 Wood-based panel products - Determination of formaldehyde

release by the gas analysis method. The results of testing for product P2 and MDF is 0,45 mg/m<sup>2</sup>\*h, resp. 0,34 mg/m<sup>2</sup>\*h.

AMF boards manufactured by Knauf Insulation, spol. s r.o. meet E1 class formaldehyde emission requirements according to EN 13964.

In addition to the assessment of the technical documentation the indoor air quality measurement by accredited laboratory of Health Institute in Ústí nad Labem was performed. Measurement was performed in one office room and one laboratory during 4 continuous hours on 2012-05-01. The ventilation was in operation during and continuously before the measurement. During the measurement only the technician was present in the measured spaces. The air sampling procedures were carried out in the middle of the rooms in the user's breathing zone (office – 105 cm, laboratory – 150 cm).

## Measuring results

**Table 1: Office room No. 306 / VOC concentrations**

Analyte	Measuring time	Sample No.	Volume	Pressure	Temp.	Content	Concentration*	Concentration**
			[l]	[hPa]	[°C]	[µg]	[µg/m <sup>3</sup> ]	[µg/m <sup>3</sup> ]
<b>benzene</b>	7:05-11:05	13326	48,0	1012	20,4	0,039	0,8	<b>0,8</b>
<b>toluene</b>	7:05-11:05	13326	48,0	1012	20,4	0,252	5,3	<b>5,3</b>
<b>ethylbenzene</b>	7:05-11:05	13326	48,0	1012	20,4	0,229	4,8	<b>4,8</b>
<b>xylens</b>	7:05-11:05	13326	48,0	1012	20,4	0,797	16,6	<b>16,6</b>
<b>styrene</b>	7:05-11:05	13326	48,0	1012	20,4	0,041	0,9	<b>0,9</b>
cyklohexan	7:05-11:05	13326	48,0	1012	20,4	0,828	17,3	<b>17,3</b>
α-pinen	7:05-11:05	13326	48,0	1012	20,4	0,356	7,4	<b>7,4</b>
hexan	7:05-11:05	13326	48,0	1012	20,4	0,187	3,9	<b>3,9</b>
naphthalene	7:05-11:05	13326	48,0	1012	20,4	<0,02	<0,4	<b>&lt;0,4</b>
tetrachlorethen	7:05-11:05	13326	48,0	1012	20,4	<0,02	<0,4	<b>&lt;0,4</b>
<b>formaldehyde</b>	7:05-11:05	13326	312,0	1012	20,4	4,6	14,7	<b>14,8</b>

\* values for the measuring conditions

\*\* values for the reference conditions (20 °C, 101,325 kPa)

**Table 2: Laboratory No. 120 / VOC concentrations**

Analyte	Measuring time	Sample No.	Volume	Pressure	Temp.	Content	Concentration*	Concentration**
			[l]	[hPa]	[°C]	[µg]	[µg/m <sup>3</sup> ]	[µg/m <sup>3</sup> ]
benzene	7:35-11:35	13325	45,6	1012	20,9	0,038	0,8	<b>0,8</b>
toluene	7:35-11:35	13325	45,6	1012	20,9	0,201	4,4	<b>4,4</b>
ethylbenzene	7:35-11:35	13325	45,6	1012	20,9	0,238	5,2	<b>5,2</b>
xylens	7:35-11:35	13325	45,6	1012	20,9	0,924	20,3	<b>20,4</b>
styrene	7:35-11:35	13325	45,6	1012	20,9	<0,02	<0,4	<b>&lt;0,4</b>
cyklohexan	7:35-11:35	13325	45,6	1012	20,9	1,131	24,8	<b>24,9</b>
α-pinen	7:35-11:35	13325	45,6	1012	20,9	0,041	0,9	<b>0,9</b>
hexan	7:35-11:35	13325	45,6	1012	20,9	0,324	7,1	<b>7,1</b>
naphthalene	7:35-11:35	13325	45,6	1012	20,9	<0,02	<0,4	<b>&lt;0,4</b>
tetrachlorethen	7:35-11:35	13325	45,6	1012	20,9	<0,02	<0,4	<b>&lt;0,4</b>
formaldehyde	7:35-11:35	13325	240,0	1012	20,9	3,2	13,3	<b>13,4</b>

\* values for the measuring conditions

\*\* values for the reference conditions (20 °C, 101,325 kPa)

**Table 3: Comparison of the results with limit values**

Analyte	Decree No. 6/2003 Coll.	Government Decree No. 361/2007 Coll. *	Concentration**
	[µg/m <sup>3</sup> ]	[mg/m <sup>3</sup> ]	[µg/m <sup>3</sup> ]
benzene	7	3	<b>0,8</b>
toluene	300	200	<b>5,3</b>
ethylbenzene	200	200	<b>4,8</b>
xylens	200	200	<b>16,6</b>
styrene	40	100	<b>0,9</b>
cyklohexan			<b>17,3</b>
α-pinen			<b>7,4</b>
hexan			<b>3,9</b>
naphthalene	-	50	<b>&lt;0,4</b>
tetrachlorethen	150	250	<b>&lt;0,4</b>
formaldehyde	60	0,5	<b>14,8</b>

\* PEL – permissible exposure limits. Concentrations of chemicals or dust in the workplace environment must not exceed 1/3 of PELs.

\*\* values for the reference conditions (20 °C, 101,325 kPa)

Results of the accredited indoor air quality measurement are in compliance with Decree of the Ministry of Health of the Czech Republic No. 6/2003 Coll., on hygienic limits of chemical, physical and biological indicators for indoor environment of residential rooms of some buildings and with Government Regulation No. 361/2007 Coll., determining conditions for occupational health protection.



### **Rating for SCoRE**

The results of the assessment are in compliance with SCoRE standard for indoor air quality pollutants. This part of the assessment is not scored.

### **Strengths and weaknesses concerning the indoor air quality of the building**

VTP Roztoky is a new building where new materials and products which meet requirements on the health and environmental protection were used. But on the other hand the activities in laboratories for testing of vehicles situated in the building can be source of other potential pollutants. This issue is solved by use of advanced air circulation system.

### **Recommendations to maintain indoor air quality of building**

Main opportunities to keep and improve indoor air quality of the building are as follows:

- a) Use of low emission furniture.
- b) Use of environmentally friendly cleaning products.
- c) Avoid bringing products into the building that could release harmful contaminants.
- d) Water and maintain office plants properly.
- e) Place office furniture and equipment with air circulation, temperature control, and pollutant removal functions of the heating, ventilating, and air conditioning system in mind.
- f) Avoid procedures and products that can cause indoor air quality problems.
- g) Integrate indoor air quality concerns into your purchasing decisions.
- h) Work with the building manager to ensure use of only necessary and appropriate pest control practices, and nonchemical methods where possible.
- i) Work with building management and the contractor before you remodel or renovate to identify ways of keeping building occupant exposure to pollutants to a minimum and to ensure that the air distribution system is not disrupted.

#### 4.4.2. M4.2 - Sustainability of construction

The assessment of criterion sustainability of construction is based on evaluation of many aspects, which includes: Load bearing structure including Recycling ability, Thermo insulation, Moisture protection, Effort during regular maintenance and Related costs.

##### Load bearing structure

The structural design is prepared according Euro codes by using software RIB and FINE. The structure has special demands on dampening of vibrations under test equipment. The testing machines are placed on dilated fastening steel plate, which are divided from concrete skeleton by pneumatic pads. The transmission of noise and vibrations to structure frame from laboratories wasn't measured yet. However the first tests of truck engine interconnected with dynamometer were carried out and the subjective feeling of working people in neighbor rooms is very good. The final testing of noise and vibration will be done by accredited laboratory after installing and operating all test equipments. To fulfill of these requirements is a necessary condition to obtain final approval of technology part of building by building authority.

Recycling ability of structure frame is in direct comparison to other construction material (precast concrete, steel, timber, masonry) bad.

The foundations are protected against radon (acc. to map is radon index low) by bentonite mat.

##### Thermo insulation

It is used common thermo insulation. We identified several thermal runaways:

- in connection roof/ light well (no thermo insulation is placed there);
- in poor isolated openings for air-handling system;
- in insufficient amount of insulation in shaft for chimney and piping;
- in insufficient amount of insulation under window blinds (5cm of XPS).
- non-standard execution of parapets, missing insulation under metal parapet sheets

We would like to emphasize that no insulation protects connection roof/ light well. There is high risk of water condensing.

##### Moisture protection

For foundation is used so called white tank (waterproof concrete is used). No humidity marks were identified. On the roof is used standard PVC-P foil, water tightness test wasn't made. Marginal damages were identified on waterproofing membrane, mechanical anchorage in attic isn't protect with any sealing. During the inspection we remarked, that surface mechanical anchorage of water proofing membrane through thermo insulation into reinforced concrete slab is loosed on many places. Even on new anchorages, which were installed additionally, was this defect apparent. The waterproofing membrane isn't totally flat, there were measured the local deviation approx. 20 mm (isolation isn't harmed by standing water, but the number of micro-organism may be increased in such environment). The recommended maximal tolerance is 10 mm acc. to Czech standard ČSN 731901, Appendix G.

##### The level of difficulty of the routine maintenance

The valuable materials were used for facades panels and interior veneers. Facade composite wood panels and windows with aluminum frame need to be cleaned by climbers (the service tube for rope fixation is along the whole building perimeter).

Wall panels in interior are maybe original – looking, however horizontal boards, which are going out of the panels have sharp edges and also reducing the spatiality of the corridors. Under the panels between battens at the elevator are used the thermo insulation to decrease noise.

Flooring is made by epoxy coating in laboratories, by floor tiles in sanitary facilities, by carpets in the offices. It was identified worse quality of office flooring - the chipboard raised floors doesn't ensure flat surface, the life-time of carpet is therefore significantly reduced. To increase employees comfort it is recommended to level chipboard floors and to use leveling pad under the new wall-to-wall carpet.

#### **4.4.3. M4.3 - Noise control**

Criterion noise control is based on evaluation of acoustic design to prevent from harmful impact of noise on the human health. Evaluation is related to hygienic requirements and additional assessment based on real building operation. The part of this criterion is also assessment of vibrations.

##### Acoustic insulation

The detailed Acoustic study was prepared. The study comes out of the theoretical values and noise spectrum, which were adopted from similar test laboratories. The noise test was carried out in internal and external areas for air handling system, elevators and power diesel generator. The measurements meets all hygienic limits with reserve.

The other noise test need to be performed for fully equipped and operating laboratory. In case of need the gap between concrete slab and chipboard raised flooring may be filled with acoustic insulation. However the first tests of truck engine interconnected with dynamometer were carried out and the subjective feeling of working people in neighbor rooms is very good.

There were found some discrepancies between Acoustic study and project. The study assume thickness of insulation 100 mm Orsil T-N between laboratory and office area, the project mentions only 50 mm.

##### Vibrations

The transmission of vibrations to structure frame wasn't tested yet, as the testing equipment in laboratories doesn't fully operate.

#### **4.4.4. M4.4 - Comfort conditions**

The assessment is based on personal experience made within the survey. Thermal comfort and also subjective quality of the indoor air were good. But the building was only in trial operation and there were no special requirements on the comfort and the space was not burdened with operation such as energy gains etc. For this reason, the assessment has to be regarded only as preliminary.

#### **4.4.5. M4.5 - Equipment Functionality**

Technical equipment is fully functional. All control panels are easily accessible and simple to use.

Disposition of the lighting system often does not fit the disposition of the furniture - the working place is not located at the maximally lighted area.

#### **4.4.6. M4.6 - Quality of equipment**

VTP Roztoky is a new building with good quality of the particular parts of the interior design. Unfortunately, finishing and decorations of the office spaces and corridors are burdened with a number of small defects (due to the low quality implementation of the components) which do not affect the usability of the spaces but affect the overall impression from the space. Significant are particularly shortcomings in the laying of carpets and decorative moldings and trims.

#### **4.4.7. M4.7 - Maintenance costs**

Given that the subject of the assessment is entirely new building, also this part has to be regarded only as preliminary.

The building is equipped with very many technical systems. This is most due to the fact that it contains a special space of laboratories. But beside it, the office spaces are heated and cooled through HVAC system, which uses energy from heating pump and other cooling units located on the roof – and simultaneously, another system - Daikin III is also used to meet the local requirements on thermal comfort. So there is one independent system more than is common, although it will probably energetically highly efficient. (we assume that in common case, only one cooling circuit could be used for HVAC system and direct cooling of offices through fan coils)

To ensure functionality of specialized laboratories, a extensive HVAC system and cooling water circuit had to be installed. From our point of view, some air handling units are arranged in the limited spaces, so that their maintenance is difficult. Their arrangement enables the regular maintenance, but the replacement or general repair of those units is not possible or will be extremely expensive.

Due to the facts above, it is not possible to expect low maintenance costs of this object. Decisive will be the factual experience during full and long term operation of the building.

#### **4.4.8. M4.8 - Opportunities to improve evaluation of module Building:**

- 1) Redesign the critical thermal runaways using thermo camera for identification
- 2) Finalization of testing of noise and vibration by accredited test laboratory acc. to Czech Government Decree No. 148/2006 Coll.
- 3) To reserve space for containers for separation of waste
- 4) Define parking places for bicycles, establish accessible shower for all building employees
- 5) Establish socket in the outer area for electric vehicles

## 4.5. Module 5 – Location

### 4.5.1. M5.1 - Infrastructure association

Czech Republic is located in the heart of Europe and it shares borders with Germany (to the west), Austria (to the south), Slovak Republic (to the east) and Poland (to the North). Czech Republic comprises 79,000 km<sup>2</sup> including Bohemia in the west and Moravia and Silesia to the east. It has a population of 10,350,000 of which two thirds live in non urban areas.

Prague, the capital city of the Czech Republic, is a thriving city with a population of 1,200,000 people. While Brno and Ostrava to the east have a population of 370,000 and 315,000 respectively. Czech Republic is strategically located adjoining strong western European economies of Germany and Austria. Road networks have been constructed over the past 10 years to facilitate in the importance transportation within the region.

The subject property is located to the northwest of Prague in Roztoky, which is in the centre of the Czech Republic. It is situated approximately 18 km to the northwest of Prague city centre.

Prague West is an area that has seen an amount of residential development in recent years. These developments have increased the local labour force as well as increased demands on local services.

The subject property is located in Roztoky, in Žalov district, to the north of Příkladská Street.

The Roztoky area of Prague West has a strategic location benefiting from relatively good transport links. The property provides good access to the main transportation links in Prague connecting to the main traffic flows within Czech Republic.

The Property is easily accessible by car. The property is located approximately 11 km from the R7 highway and in the proximity to the proposed northern part of the Prague Ring Road.

The property benefits from good public transport links including train and bus lines. Busses connect the property to the Dejvická metro station. Prague Ruzyně international airport is situated approximately 12 km to the west of the site.

Metro	9.8 km – Dejvická
Bus stop	200 m to the east
Railway station	2.5 km – to the east
Tram stop	8.8 km – Podbaba
R7 highway	11 km to the west
Airport	12 km to the west
LPG fuelling station	2 km to the west
CNG fuelling station	15 km to the south

The surrounding area consists of family houses to the north and south across Příkladská Street arable land to east and business park to the west of the property.

#### **4.5.2. M5.2 - Infrastructure of work & living**

In the proximity to the property are several restaurants of various types available in walking or easy drive distance. In the subject part of town of Roztoky are also available diverse commercial operations. The most important retailers include Tesco and Albert. Other important public amenities are located in the town centre approximately 2 km to the east.

In the subject area are no public parks, leisure centers or leisure centers, however there are many opportunities to access countryside (Vltava river bank, Maxmilianka etc.). Tennis club lies 1km to the northeast of the property.

There are three nursery schools located in the town of Roztoky and the nearest is circa 0.5 km to the northeast on Zalovska Street. It should be noted that, currently the capacity of public nursery schools is not sufficient and there are additional private opportunities.

Town hall is located in the historical hearth of the town, approximately 2.4 km to the east on 5. kvetna square. Also church Kostel narození Sv. Jana Krtitele lies in the same area.

#### **4.5.3. M5.3 - Image and state of location and accommodation**

The building was built to the highest standards as the investor specifically looked at the design and particular design details. Overall the attractiveness of the property in the subject area is very high. It should be noted that demand for such the building in the subject area might be limited.

According to the local police the subject area is relatively safe without any serious noticeable problems. The residential part of the neighborhood is well maintained. On the other hand the Přílepská Street would require some improvements in the near future.

#### **4.5.4. M5.4 - Criteria specific for property**

According to Cadastral Extract number 2447, the site extends to a total area of 7,586 m<sup>2</sup>. The site is sloping to the south and is roughly rectangular in shape. The property is directly accessible from the public road - Borivojova Street. The access and egress is via automatic entrance gate.

We have assumed that there are no encumbrance easements, restrictions, outgoings or conditions that are likely to have an adverse effect on the property.

We understand that all mains services are available to the property including electricity, gas, water and mains drainage. We have assumed that the capacity of the services is adequate for the future use of the property.

The built-up area of the property is 1,075 m<sup>2</sup> and the total size of the site is 7,586 m<sup>2</sup>.

The property lies within the jurisdiction of Roztoky council who's planning policies are contained within the master plan. The current zoning of the property is Light Industrial production and services. The current planning uses permissible include services and light industrial and storage facilities, which appear to generally comply with the uses currently carried out at the property.



We have not received any relevant information about future potential extension of the property. The property is currently in its best use and therefore redevelopment is not considered to be a major factor in the evaluation of the property at the present time.

Before the construction started the site was an agricultural land lying within the urban area of Roztoky. The construction was a first cultivation of the subject site.

We are not aware of any environmental risks. During the inspection of the property and its proximity we have not discovered any environmental problems.

The construction was undertaken in line with the architectural plans and the construction process was overseen by the architects regularly. The use permit was issued in 2011.

The property is not listed and does not lie in the historically protected area.

The architecture is up to date in line with the current trends. As the major use of the surrounding area is residential housing, the size of the property might be slightly oversized.

#### **4.5.5. Opportunities to improve evaluation of module Location**

There is only limited potential for location improvements. We would recommend communicating with the municipality of the town of Roztoky to speed up and coordinate the refurbishment works on the Prilepska Street. We are of the opinion that refurbishment of the street and its surrounding will improve the general image of the property.



Czech

## **5. Annex: Checklist - detailed evaluation**

01 Energy	max. score 700	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCoRE</b>							<b>511</b>

Energy consumption	max. 700	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Assessment according to the Energy performance of building certificate	<b>STOP</b>	Energy Performance of Building Certificate is available	2012-05-25	<b>K.O. Criterion: If Energy Performance of Building Certificate is not available: No start of the check. No final check is possible.</b>	-	-	
	511	Data from Energy Performance of Building Certificate. (Issued by Ing. Pavel Zinburg, 25.5.2012)	2012-05-29	Rated range of annual energy consumption is 124 - 61 kWh/m <sup>2</sup> according to Decree No. 148/2007 Coll. Span 124 - 61 kWh/m <sup>2</sup> corresponds to the SCoRE from 0 to 700 points. If less than 50% of maximum points are achieved, no Gold certificate is possible. The calculated annual energy consumption is 78 kWh/m <sup>2</sup> .	M1.01	x	<b>511</b>

Improvements	165	Estimation based on energy consumption calculations	2012-05-29	Use of lighting system based on LEDs	M1.02	x	<b>165</b>
	22	Estimation based on energy consumption calculations	2012-05-29	Use of photovoltaic solar panels	M1.02	x	<b>22</b>
	11	Estimation based on energy consumption calculations	2012-05-29	Increase of thermal resistance of the building envelope	M1.02	x	<b>11</b>
<b>Total SCoRE including possible improvements</b>							<b>700</b>

02 Water, waste water, waste	max. score 200	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCORE</b>							
<b>200</b>							

Water	max. score 160	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Public water supply [m <sup>3</sup> / a]							
yes	30	Project documentation, personal survey	2012-06-04	is built a new, Till now it wasn't used	M2.1	x	30
no	0						
Cold water-quantity measurement							
yes	25	Project documentation, personal survey	4.6.2012	is installed in water meter pits	M2.1	x	25
no	0						
Cold water-leakage detection	Info			Not available		-	Info
Hot water-quantity measurement							
yes	25	Project documentation, personal survey	2012-06-04	Till now it wasn't used	M2.1	x	25
no	0						
Hot water-leakage detection	Info			Not available		-	Info
WC-savings key, proximity switch, steered water inflow, vacuum WC							
yes	35	Project documentation, personal survey	4.6.2012	There are installing WC-savings key	M2.1	x	35
no	0						
Rainwater utilization							
yes	20	Project documentation, personal survey	4.6.2012	Utilization of rainwater is for flushing toilets and urinals, for irrigate the surrounding green areas.	M2.1	x	20
no	0						
Rainwater use for outdoor facilities							
yes	25	Project documentation, personal survey	4.6.2012	for irrigate the surrounding green areas.	M2.1	x	25
no	0						
Water consumption per head or workplace	Info	Project documentation, personal survey	4.6.2012	calculation of water consumption is based only on VH ML Directive No. 9/73 Coll. - 60 l per person per day	M2.1	-	Info
House well access to irrigation of the grounds	Info	personal survey	4.6.2012	No existing		-	Info
Kind of roof covering	Info	Project documentation	4.6.2012	flat concrete roof		-	Info

02 Water, waste water, waste	max. score 200	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCoRE</b>							
<b>200</b>							

Waste water	max. score 40	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Precipitation seepage yes no	30	Project documentation, personal survey	4.6.2012	Roof surfaces is drained into a separate storm sewer, collection of this water in water tanks of 10 m <sup>3</sup>	M2.1	x	30
	0						
Access to public canalization	No gold	Project documentation, personal survey	4.6.2012	yes, is done	M2.1		
Canal inspection executed before less than 5 a not executed or before more than 5 a	10	Project documentation, personal survey	4.6.2012	is built a new wastewater gravity sewer	M2.1	x	10
	0						
Canal renovation need	Info	Project documentation, personal survey	4.6.2012	Not available - is built a new wastewater gravity sewer	M2.1	-	Info
Cesspit	Yellow flashing light	personal survey	4.6.2012	is not existing			
Oil/grease separator	Info	Project documentation, personal survey	4.6.2012	Kessel G NG 7 Euro according to prEN 1825-1, in an outdoor version	M2.1	x	Info
	Info	personal survey	4.6.2012	Till now it wasn't used			Info
Glass	Info	personal survey	4.6.2012	Till now it wasn't used, will be done ----- green container, 1 piece a 220 l			Info
Plastics	Info	personal survey	4.6.2012	Till now it wasn't used, will be done ----- Yellow container, 1 piece a 220 l			Info
Paper	Info	personal survey	4.6.2012	Till now it wasn't used, will be done ----- blue container, 1 piece a 220 l			Info
Bio waste	Info	personal survey	4.6.2012	Till now it wasn't used			Info
Onset of dangerous wastes with waste disposal agreement	Info	personal survey	4.6.2012	Till now it wasn't used, will be done			Info
On-site composting of garden- /green equipment section	Info	personal survey	4.6.2012	Till now it wasn't used, will be done			Info

03 Soil/Contamination	max. score 100	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCORE</b>							
<b>100</b>							

General	Info	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Building area survey	Info	expert report from the geological engineering and geotechnical survey	January 2006		M3.1	-	Info
Waste deposit survey	Info	expert report from the geological engineering and geotechnical survey	January 2006		M3.1	-	Info
Official ground load note	Info			No entry xxxx		-	Info

Suspicion of contamination	max. score 100	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Waste deposit cause grounds	Yellow flashing light	expert report from the geological engineering and geotechnical survey	January 2006	No irregularities were determined	M3.1	-	
no	50					x	50
yes	0						
Waste deposit cause water		expert report from the geological engineering and geotechnical survey	January 2006	No irregularities were determined	M3.1	x	20
no	20						
yes	0						
Bombardment world war		Chronicle of city Roztoky	year 1945	No bombardment marks: No suspicion on special load	M3.1	x	15
no	15						
yes	0						
Information on waste deposit cadastral	STOP	http://info.sekm.cz	6.6.2012	K.O. Criterion, if no waste deposits is available: No start of the check or no final check possible		-	
No cause	15	Czech system of registration of contaminated sites			M3.1	x	15
Entry in the waste deposit cadastral available	0			studied area isn't entered in the register			

04 Building	max. score 600	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCoRE</b>							
<b>414</b>							

General	Info	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Construction year	Info	Occupancy permit	2011-07-29	Construction year: 2011	-	-	Info
Floors	Info	Project documentation, personal survey	2012-06-11	4 floors	-	-	Info
Gross base [m <sup>2</sup> ]	Info	Project documentation, personal survey	2012-06-11	1 067 m <sup>2</sup>	-	-	Info
Basement	Info	Project documentation, personal survey	2012-06-11	1 underground floor (building systems, dressing rooms)	-	-	Info
Underground parking	Info	Project documentation, personal survey	2012-06-11	No	-	-	Info
Building construction	Info	Project documentation, personal survey	2012-06-11	Reinforced concrete skeleton	-	-	Info
Building permission available / moved	Yellow flashing light	Building permission (issued: 28.1.2008, prolonged: 25.2.2009)	2012-06-11	Is available	-	-	
Fire brigade access marked	Info	Personal survey	2012-06-11	Yes	-	-	Info

Building envelop/ damage to building premises or building	Info	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Insulator	Info	Project documentation, personal survey	2012-05-15	Roof: 160 mm of XPS, U=0,22 W/(m <sup>2</sup> .K) Facade: 140 mm of mineral wool, U=0,26 W/(m <sup>2</sup> .K)	-	-	Info
Glazing, construction year	Info	Project documentation, personal survey	2012-05-15	All doors and windows achieve, U=1,2 W/(m2.K), (installed in 2011)	-	-	Info
Facade insulator construction year	Info	Project documentation, personal survey	2012-05-15	140 mm of mineral wool, U=0,26 W/(m2.K) on the concrete wall (installed in 2011)	-	-	Info
Roof insulation construction year	Info	Project documentation, personal survey	2012-05-15	160 mm of XPS, U=0,22 W/(m2.K) on the concrete roof (installed in 2011)	-	-	Info
Damage to premises or buildings	Info	Personal survey during the construction	2012-05-15	No damages	-	-	Info

04 Building	max. score 600	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCoRE</b>							
<b>414</b>							

Building technique	Info	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Low emission building material (internal & external)	<b>STOP</b>	indoor air quality measurement, project documentation, site inspection	1.6.2012	Results of the accredited indoor air quality measurement are in compliance with Decree of the Ministry of Health of the Czech Republic No. 6/2003 Coll., on hygienic limits of chemical, physical and biological indicators for indoor environment of residential rooms of some buildings and with Government Regulation No. 361/2007 Coll., determining conditions for occupational health protection. The measurement was performed by accredited laboratory of Health Institute in Ústí nad Labem.	M4.1	-	Info
Asbestos/AMF-suspicion	Info	technical documentation, site	1.6.2012	Only new products were used in the building: no PCB, HCH and PCP suspicion. No asphalt tiles made of road tar and no agglomerated cork insulation under facades and under floors and no black products for parquet floorings were used. Concentration of naphthalene in the interior air is below 0,4 µg/m³. Used water pipes, valves, fitting and interior paints do not contain lead. Low VOC emission materials and product were used (AMF boards - class E1). Concentration of VOC in the interior air are in compliance with Decree No. 6/2003 Coll. and Government Regulation No. 361/2007 Coll.	M4.1	-	Info
PCB-suspicion, color/lights/transformer	Info	technical documentation, site inspection	28.5.2012		M4.1	-	Info
HCH/PCP-suspicion, wood	Info	technical documentation, site inspection	28.5.2012		M4.1	-	Info
PAH-suspicion, floor	Info	technical documentation, site inspection, indoor air quality measurement	28.5.2012		M4.1	-	Info
Heavy metal-suspicion	Info	technical documentation, site inspection	28.5.2012		M4.1	-	Info
Other (VOC)	Info	technical documentation, site inspection, indoor air quality measurement	1.6.2012		M4.1	-	Info

04 Building	max. score 600	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCORE 414</b>							

Building design/Layout of rooms	max. score 260	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Sustainability of construction							
high	100					x	100
medium	75	Project documentation, personal survey	11.6.2012	Criterion includes assessment of Load bearing structure, Recycling ability, Thermo insulation, Moisture protection, Effort during regular maintenance and Related costs. Buildings is carried out in high standard, office area and test laboratories are comfortable for employees.	M4.2		
low	50						
	25						
	0						
Modularity							
high	20						
medium	10	Personal survey	11.6.2012	Combined monolithic structural system, building divided on laboratories (2 floors)/offices (2 floors). Upper 2 floors are of high modularity - the gypsum inner walls and glassed aluminum-frame walls may be easily removed; bottom 2 floors are single-purposed		x	10
low	0						
Spatial structure							
high	20						
medium	10	Personal survey	11.6.2012	1th and 2th floors laboratories which are designed to be used by more companies		x	20
low	0						
Barrage freedom							
optimal, today's Standard + old construction standard	20	Personal survey	11.6.2012	The access to building is completely barrage freedom		x	20
only partly implemented	10						
	0						
Spatial efficiency							
high Spatial efficiency > 0,8	20						
medium Spatial efficiency 0,6-0,8	10	Project documentation, personal survey	11.6.2012	Floor space/ gross floor area = 0,70		x	10
low Spatial efficiency < 0,6	0						
Natural light availability							
high	12						
medium	6	Project documentation, personal survey	11.6.2012	High window portion, the artificial light was measured in the offices with luxmeter, illuminance > 500 lx		x	12
low	0						
Intervisibility to outside							
high	12	Project documentation, personal survey	11.6.2012	High window portion		x	12
medium	6						
low	0						

04 Building	max. score 600	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	⊖ - Scores.
<b>Total Score</b>							
<b>414</b>							

Noise control	high 32 medium 16 low 0	Project documentation, personal survey	11.6.2012	Laboratories are proper integrated to modern office building. Lot of effort was put to decrease of noise and vibrations outside laboratories. The measurement of noise and vibrations hasn't been completed yet.	M4.3	x	16
Surrounding area green /good designed medium	8 4	Project documentation, personal survey	11.6.2012	Green areas 30%, parking area and communications 70		x	8
less green / not good designed	0						
Easy cleaning of facades	good 4 bad 0	Personal survey	11.6.2012	Facade composite wood panels and double glazed windows with aluminium frame- common cleaning by climbers		x	4
External plantation, proper & site adapted	good 2 bad 0	Personal survey	11.6.2012	Ample of greenery & plants, balanced and suitable		x	2
Facade quality/ defects	good 2 bad 0	Personal survey	11.6.2012	High quality standard, new building, no defects		x	2
Sun shade	good 2 bad 0	Personal survey	11.6.2012	Internal and external window blinds in the east and south, internal window blinds in the west and north, no shadow from neighbour building		x	2
As-built documentation	good 2 bad 0	Project documentation	11.6.2012	New building, documentation corresponds to Czech Government Decree No. 190/2002 Coll.		x	2
Green covering of a roof	yes 4 no 0	Personal survey	11.6.2012	No		x	0

04 Building	max. score 600	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCoRE</b>							
<b>414</b>							

Separation of waste	max. score 40	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Premises w.r.to floor space required		Personal survey	11.6.2012	Common separation of waste is ensured, there is no reserved space for containers			
good	30						
medium	20						
bad	0						
Accessibility		Personal survey	11.6.2012	Containers are located in front of the building (temporary, aesthetically improper solution)			
good	10						
medium	5						
bad	0						

04 Building	max. score 600	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCORE</b>							
<b>414</b>							

Miscellaneous	max. score 40	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Bicycle convenience (parking space/cloakroom/shower)		Personal survey	11.6.2012	No reserved parking place, no cycle ways. Cloakrooms and showers are available for employees of laboratory only		x	0
good	16						
medium	8						
bad	0						
No claim on surface for parking (e.g. TG, roof park place)		Personal survey	11.6.2012	Parking area is in front of the building			
good	16						
bad	0					x	0
Radio controlled garage opening/ access to park possibility	Info	Personal survey	11.6.2012	Radio controlled barrier to the parking place			Info
Loading station for electric mobility		Personal survey	11.6.2012	There is no socket in the outer area			
good	8						
bad	0						

04 Building	max. score 600	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCoRE</b>							
<b>414</b>							

Technical building services	max. score 260	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Comfort conditions / comfort	high	Personal survey, query and personal discussion with facility manager	2012-06-11	Thanks to the DAIKIN VRV III system is no problem to keep thermal comfort and also different temperature at each office.  There is only minor objection: if external sunblind's are installed, there are no inner curtains at such spaces  There is only minor objection:	M4.4	x	60
	normal						
	low						
	0						
Equipment Functionality	high	Personal survey, query and personal discussion with facility manager	2012-06-11	Lighting system often does not fit the disposition of the furniture - the working place is not located at the maximally lighted area	M4.5	x	22
	normal						
	low						
	0						
Quality /condition of equipment	high	Personal survey, query and personal discussion with facility manager	2012-06-11	A new building with good quality of individual parts of the interior design. Significant shortcomings in the laying of carpets and decorative moldings and trims.	M4.6	x	22
	normal						
	low						
	0						
Retrofitting	high	Personal survey, query and personal discussion with facility manager	2012-06-11	Modern functional design: raised floor, suspended ceilings. There is also free space for additional power circuits.  Retrofitting is possible		x	40
	normal						
	low						
	0						
Maintenance costs	low	Personal survey, query and personal discussion with facility manager		The building is equipped with very many additional systems and accessories for ensuring all requirements of laboratories. Many of them are not easily accessible. Their replacement in the future is almost impossible.	M4.7		
	normal						
	high						
	10						

04 Building	max. score 600	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCoRE</b>							
<b>414</b>							

Security high  normal  low	40	Personal survey, query and personal discussion with facility manager		Advanced fire protection concept (fire panel), automatic gas extinguishing systems in laboratories. Offices are not equipped with sprinklers. Advanced electronic access control system 10 security cameras monitors entrances and the surroundings			
	30					x	30
	20						
	10						
	0						
<b>Total SCoRE</b>							
<b>414</b>							

Improvements	0	Project documentation, personal survey	2012-05-29	Redesign the critical thermal runaways using thermo camera for identification	M4.9	x	0
	16	Project documentation, personal survey	2012-05-29	Finalization of testing of noise and vibration by accredited test laboratory acc. to Czech Government Decree No. 148/2006 Coll.	M4.9	x	16
	30	Personal survey	2012-05-29	To reserve space for containers for separation of waste	M4.9	x	30
	16	Personal survey		Define parking places for bicycles, establish accessible shower for all building employees	M4.9	x	16
	8	Personal survey		Establish socket in the outer area for electric vehicles	M4.9	x	8
<b>Total SCoRE including possible improvements</b>							
<b>484</b>							

05 Location	max. score 400	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCoRE</b>							
<b>280</b>							

Infrastructure association	max. score 108	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Local public transport < 0,5 km > 0,5 km	36 0	www.mapy.cz	2012-06-02	Bus stop line : 200 m Tram: 8.8 km Prague 6, Podbaba Sub way: 9.8 km Prague 6, Dejvicka	M5.1	x	36
Lane-heavy railroad < 0,5 km > 0,5 km	16 0	www.mapy.cz	2012-06-02	Train stop Roztoky 2,5 km		x	0
Express way < 0,5 km > 0,5 km	16 0	www.mapy.cz	2012-06-02	R7 Kněževés: 11 km		x	0
Airport < 50 km > 50 km	16 0	www.mapy.cz	2012-06-02	Prague Ruzyně Airport 12 km		x	16
Bicycle lane < 1km > 1km	16 0	findings from the property inspection	2012-06-02	Bike path not available, bike access via local roads		x	0
Natural gas filling station < 15km > 15km	8 0	Directory of LPG filling stations www.lpg.cz	2012-06-02	Velke Prilepy 5km		x	8
Hydrogen fuelling station	Info	Directory of CNG filling stations	2012-06-02	CNG fuelling station: Prague 6, Evropska Street 15 km			Info

Infrastructure of work & living	max. score 92	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Gastronomy < 0,5 km > 0,5 km	24 0	www.google.cz, www.mapy.cz	2012-06-05	Small restaurant is directly in the building. In the proximity to the property are several restaurants of various types available in walking or easy drive distance.	M5.2	x	24
Commercial operations daily need & medical supply < 0,5 km > 0,5 km	24 0	www.google.cz, www.mapy.cz	2012-06-05	Diverse commercial operation Tesco, Albert, Pharmacy and other small local shops 0.5 - 2 km		x	24

05 Location	max. score 400	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCORE</b>							
<b>280</b>							

Free time, local recreation, public park, sports	< 0,5 km	16	www.google.cz, www.mapy.cz	2012-06-05	In the subject area are no public parks however there are many opportunities to access countryside (Vltava river bank, Maxmilianka etc.) Tennis club lies 1km of the property		
	> 0,5 km	0				x	0
Child care	< 0,5 km	20	www.google.cz, www.mapy.cz	2012-06-05	0.5 km Zalovska Street, currently is not the capacity sufficient	x	20
	> 0,5 km	0					
Public administration	< 2km	8	www.google.cz, www.mapy.cz	2012-06-05	2.4 km 5. kvetna square, Roztoky		
	> 2km	0				x	0
Building following relig. Communities	Info	Info	www.google.cz, www.mapy.cz	2012-06-05	Kostel narozeni Sv. Jana Kritele, Roztoky, 2.4 km		Info

Image and state from location and accommodation	max. score 120	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Image and attractiveness	good	80	Own findings after the property inspection, judgement and comparison with comparable buildings in the subject area.	The building was built to the highest standards and the investor specifically looked at the design and particular details. Overall the attractiveness of the property in the subject area is very high.	M5.3	x	80
	on an average	40					
	Below average	0					
Crime	unproblematic	20	local police assistance over the phone, news	No noticeable problems. Local police assistance is achievable.		x	20
	problematic	8					
	very problematic	0					
Maintenance and condition of the surrounding	well kept	20	Findings from the local appointment, Own appraisal after the judgment of supervision of expert opinion	The residential part of the neighbourhood is well kept but the Pilepska Street would require some improvements in the near future			
	neat/regular	8				x	8
	un maintained	0					

05 Location	max. score 400	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total SCORE</b>							<b>280</b>

Criteria specific for property	max. score 80	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
Property size	Info	Land register extract, Official layout (to be submit from client)	2012-06-07	The built-up area of the property is 1,075 m2 and the total size of the site is 7,586 m2	M5.4		Info
Charges in department II of the land register	Info	Land register extract, Official layout	2012-06-07	No relevant primarily charges.			Info
Development (access, entrance)	Info	Land register extract, Official layout	2012-06-07	The property is directly accessible form the public road - Borivojova Street. The access and egress is via automatic entrance gate.			Info
information specific to the building/construction area	Info	Phone query with building authority	2012-06-07	Land is zoned for light industrial and storage purposes, however is neighbouring with purely residential area to the north and south.			Info
building secure possibility for extension-/alternative construction	Info	Building permission (to be submitted from the client or query with building authority)	2012-06-07	We have not received any relevant information about future potential development			Info
Land consumption							
Succession cultivation a formerly build-up plot	12	Information to architectural previous use by customers, historical data available on www.mapy.cz	2012-06-07	The property was an agricultural land lying within the urban area of Roztoky. The construction was a first cultivation of the site			
First construction of a formerly vacant property	0					x	0
Splinter development area							
Construction in the inside area	20	Telephonic Query with building authority of town of Roztoky	2012-06-07	Construction within the urban area of Roztoky		x	20
Construction in the out area	0						
Environmental risks: Rockfall, avalanches, slope slide, erosion, storm, (high) water, volcano,	Info	Telephonic Query with building authority whether knowledge for dangers available. Knowledge from local Appointment.	2012-06-07	No environmental risks are known			Info

05 Location	max. score 400	Source of information	Dated data source	Explanation text	See comment	Rating by "x"	☺ - Scores.
<b>Total Score</b>							
<b>280</b>							

immission load (e.g Noise, exhaust gases, respirable dust, radiance)	Yellow flashing light	Knowledge from local appointment	2012-06-07	During the inspection of the property and its proximity we have not discovered any problems.		x	
	24						24
	8						
considerable appointments, to those, however, calculation by suitable architectural measures		Proof of the competitive procedure by the customer	2012-06-07	The construction was undertaken in line with the architectural plans and the construction process was overseen by the architects regularly.		x	0
	0						
	8						
considerable appointments		Monument list	2012-06-07	No			
	0						
	8						
ARCHITECTURE		Proof of the competitive procedure by the customer	2012-06-07	No			
	0						
	8						
Building is a monument		Knowledge from local appointment	2012-06-07	The architecture is up to date in line with the current trends. As the major use of the surrounding area is residential housing, the size of the property might be slightly oversized.		x	0
	0						
	8						
Art in the construction exists and is a result of a competition		Knowledge from local appointment	2012-06-07	No			
	0						
	8						
Architecture is typical for field/is not specific for Field		Knowledge from local appointment	2012-06-07	No			
	0						
	8						
Artistic objects (not result of competition)		Knowledge from local appointment	2012-06-07	No			
	0						
	8						